

SYSTEM AND METHOD FOR CONTROLLING WELDING PARAMETERS  
IN WELDING-BASED DEPOSITION PROCESSES

ABSTRACT OF THE DISCLOSURE

5           According to one embodiment of the invention, a method for controlling  
operational weld parameters of a welding-based deposition process includes  
generating a solid model representing a three-dimensional part on a computer,  
electronically slicing the solid model into a plurality of electronic two-dimensional  
layers, identifying a path of material deposition based on the electronic two-  
10   dimensional layers, the path comprising a plurality of deposition points, and  
determining a geometrical factor for each deposition point. The geometrical factor is  
defined by a ratio of an actual volume of material around each deposition point to a  
theoretical volume of material around each deposition point. The method further  
includes automatically adjusting, during material deposition for a respective  
15   deposition point, one or more parameters of the welding-based deposition process  
based on the geometrical factor for the respective deposition point.